ENVIRONMENT

A SUBSTUDY OF THE REGIONAL OFFICIAL PLAN

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THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH
PLANNING AND DEVELOPMENT DEPARTMENT November 1975

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ENVIRONMENTAL RESOURCES

A SUBSTUDY OF THE REGIONAL OFFICIAL PLAN

INVENTORY

SUMMARY REPORT

FOR

THE REGIONAL OFFICIAL PLAN SEMINAR

NOVEMBER 28, 1975

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INTRODUCTION

Environmental planning is one element in the total planning process that to date has not been well articulated. Rapidly expanding urban areas exhibit problems of environmental planning ranging from pollution to recreational planning and the preservation of prime agricultural lands and other important resources.

The purpose of the environmental planning is to achieve that spatial organization of future urban form which best satisfies the criteria of minimizing the loss of presently perceived environmental qualities. Planning on a regional scale offers choices of spatial alternatives and, therefore, some promise of environmental planning, and in seeking spatial elements and systems that best achieve social, economic, functional and ecological goals.

It is, therefore, necessary to prepare an appraisal of the physical, biological and cultural features in the area and create a public awareness of these systems which deserve special consideration in future land use planning decisions aimed to be environmentally optimal.

Lessons should be learned from the development which resulted in major environmental demage, and an attempt should be made to correct these problems and plan for the future growth in a manner so as to avoid and/or minimize such potential problems.

In order to help the creation of a public feeling and understanding of this Region's major resources and natural systems, it is important to present an inventory of natural systems and data on the demands and needs for goods and services that these natural resources are, and will be called upon to meet; and the capacity of natural resources to absorb development and accommodate demands at an acceptable performance level. An attempt has been made to quantify, where possible, the limitations of the natural systems in relation to the estimated demands that these systems will be expected to meet due to urban growth.

It is hoped that the inventory of natural systems and a discussion presented in this report will provide a meaningful basis for public discussion on the wise management of the natural resources of this Region, for the benefit of the present and future residents.

1. Natural Resources and Their Management

Under this heading a quantitative analysis of Agricultural land, Mineral resources and Forests will be presented. At the very outset, it has to be recognized that production of food and the economy and use of mineral resources is a matter of Provincial and National significance. It is, therefore, necessary to present a broader view of these issues before presenting a discussion on the impacts of gorwth on agricultural land and mineral resources on a regional scale. Also, the discussion presented here is not intended to compare the economies of agricultural and mineral industries with other form of land uses. It is the intent of this section, however, to present estimates on the projected demand of food and mineral resources in order to emphasize that the economic criteria used, in the past for evaluating natural resources is inappropriate because urban societies treated agricultural land as a transitional land use only. Municipal policies on growth have often been based on the cost of providing physical and social services without regard to the loss of non-renewable resources.

Local, Provincial and Federal policies related to management of these resources will have to be changed to meet the future demands satisfactorily.

A. Mineral Aggregates

Next to water, concrete is the most used commodity by modern man. Concrete being 90% sand, gravel and crushed stone we must, therefore, conclude that a continued inexpensive abundant supply of this material is essential for our economic growth.

a) Mineral Aggregate Reserves

This region is rich in naturally occurring mineral aggregates in that 32% of the estimated reserves in central Ontario are located within the boundaries of this region. In this Region, naturally occurring bed-rock formation, more than 100 ft. in thickness, is an excellent source of crushed stone aggregate used in the construction industry. The estimated quantity of 26.9 bil-billion tons of mineral aggregate reserves are located as shown in the following table.

Estimated Quantities of Mineral Aggregate Reserves
(million tons)

Municipality	Gravel	Crushed Stone	Hamilton-Wentworth as % of Central Ontario Gravel	Hamilton-Wentworth as % of Central Ontario Crushed Stone
Ancaster	0.5	300		
Hamilton	--	750		
Glanbrook	--	3,180		
Flamborough	57.0	18,700		
Stoney Creek	--	4,000		
TOTAL	57.5	26,930	0.56%	32%

b) Mineral Aggregate Supply

The above figures indicate that both Hamilton-Wentworth and Central Ontario Regions contain large reserves of naturally occurring mineral aggregate. However, due to encroachments by spreading urbanization and legislative controls, e.g., Mining Act, Pits and Quarries Control Act, the Niagara Escarpment Development control regulations, etc. all reserves are not available for extraction by conventional open pit mining methods. The available reserves will continue to shrink as the boundaries of urbanization continue to encroach on top of these reserves. Urban encroachments can leave a large part of these reserves buried forever. Based on various controls which are in effect and an estimated expansion of urban boundaries assumed to accommodate 12 million residents in Ontario by the year 2001, it is estimated that only less than 10% of the total reserves will be available for extraction by the year 2001. The predicted available supply is estimated to be 3 billion tons in Central Ontario.

c) Consumption and Future Demand of Mineral Aggregates

Per capita consumption in Ontario increased five-fold between 1945 and 1965. Per capita consumptions are expected to increase in the future and it is estimated that per capita consumption will be 14.7 tons in the year 2001. Based on these assumptions the cumulative demand in Central Ontario by the year 2001 is estimated to be 2.8 billion tons. The estimated available supply to the year 2001 is 3.0 billion tons. These figures clearly

indicate that there may well be a shortage of this necessary material beyond the year 2001, without proper management of this resource in future land use planning.

d) Costs

50% of the total cost charged to consumer reflects the transportation costs. Hauling by trucks is expected to remain in effect in the foreseeable future. Since the transportation costs are directly proportional to distance and the automobile fuel costs are expected to rise significantly in the future, it is highly desireable that the future supply sources are maintained close to the urban markets.

Based on the foregoing it is required to recognize the need for full resource management of this non-renewable resource. The following draft goals are, therefore, suggested.

e) Draft Goals

1. Regional Official Plan should indicate areas for future extraction of gravel and crushed stone aggregates.
2. Appropriate geological studies be undertaken to determine the most desireable locations for future extractive industries.

B. Agricultural Lands

Throughout Ontario Agricultural land resource has been treated as a commodity in free market place with the result that approximately 2.5 million acres of prime agricultural land was removed from food production between 1941 and 1971. In 1971 there was approximately 10.9 million acres of improved farmland composed of classes 1, 2, 3 and 4. The average rate at which prime agricultural land was removed from food production between 1966 and 1971 was 200,000 acres per year. At this rate all of the improved farmland in southern Ontario would have been lost within the next 50 years. In all probability, long before this, agriculture would cease to exist in southern Ontario as a viable industry if market forces are allowed to reign unconfined in the allocation of land to various uses.

a) Demand for Agricultural Land for Food Production

At the 1971 level of productivity and consumption, it requires 1.7 acres of improved farmland, per capita, to produce the amounts of meats and livestock products consumed. Probably an equivalent of 1.8 acres per person are required to produce all the food.

Conservative estimates show that the population in Ontario will increase to 12.0 million by the year 2001. If it is assumed that the productivity in agriculture will increase to 170% by the year 2001 and that moderate increase will occur in consumption level so that a minimum of 1.27 acres of land per capita were required to produce sifficient food, then 13.4 million acres of improved land would be required for 12 million people. At our present rate of fall out of productive farmland in Ontario, the Province would be able to provide only less than 40% of its needs by the year 2001. By the year 2025, Ontario will probably be totally dependent on imports, for its food supply, either from other provinces or other countries.

The recent concern by the public on loss of agriculture land is, therefore, a genuine one and all of these factors indicate that the agriculture resource can no longer be treated as a commodity as has been the case in the past.

b) Agricultural Resource in Hamilton-Wentworth Region

This Region has a large agricultural resource base in that only 20% of the total landscape is urbanized. More than 70% of the agriculture soils are in classes, 1, 2 and 3 and more than 80% of the non-urban land is under farm production. Compared with the provincial average, the Region has a higher proportion of land suitable for the cultivation of the common field crops. Total area reporting farm production in 1971 was 171,000 acres.

Although most of the agriculture soils are suitable for common field crops, Region's agriculture base between the escarpment and Lake Ontario is most valuable and is unique in Canada. The afore-noted agricultural resource located in Stoney Creek is part of the Niagara Fruit Belt - extending from Hamilton to the Niagara Area. The greatest impact of urbanization in this Region has been on this unique agriculture resource.

c) Impacts of Urbanization on Unique Fruit Belt

The Niagara Fruit Belt is described as unique because it is endowed by nature by a combination of soil and climatic conditions which are unique and cannot be replaced elsewhere. Soils of the Iroquois plain (clay overlain by sand) and the sheltering effect of the escarpment provides climate-soil conditions which are a requirement for the growing of tender fruits, i.e., peaches, sweet cherries and special species of grape vineyards.

The Fruit Belt resource and its production is of tremendous provincial and national significance. Nationally, the Niagara Fruit Belt accounts for over 60% of the peach and cherry production, 45% of the pears, plum and prune production and 0.8% of the apple production. In Ontario, the proportion of fruit production supplied

by the Niagara fruit is substantially higher ranging from 78% for peaches and pears, 83% for cherries, 87% for plums and prunes and 3% for apples.

The above-noted figures clearly indicate the National significance of the Niagara Fruit Belt area. The soils and climatic factors of the Niagara Fruit Belt cannot be replaced elsewhere. It is important, therefore, to recognize that the loss of land in the Fruit Belt to residential and industrial uses would result into the loss of a unique resource.

d) Loss of Orchards and Vineyards in Hamilton-Wentworth Region

Map #2 represents the history of expansion of the urban boundaries in the Fruit Belt area in this Region. Over 2000 acres of the tender fruit soil was taken out of fruit production between 1934 and 1965. The total acreage lost, as well as annual rate of loss was highest of all the municipalities within the entire Fruit Belt. In 1965, out of a total acreage of approximately 45,000 under orchards and vineyards in the entire Fruit Belt the acreage in the City of Hamilton and Town of Stoney Creek was reported to be 681 acres and 4,655 acres respectively. The Town of Stoney Creek ranked fourth, in acreage, after Niagara, Clinton and Louth which contained 10,000, 8,000 and 7,000 acres respectively.

Within the boundaries of the City of Hamilton, orchards and vineyards have practically disappeared and are now non-existant. The acreage under orchards and vineyards production in Stoney Creek was reported to be 4,053 acres in 1974. Compared with 1965, this shows a reduction of approximately 600 acres.

The evidence is, therefore, strong that a set of economic and social forces are gradually but surely eating away the irreplacable horticulture soils. In face of this situation a certain mood of despair seems to have settled with the prevailing view that fruit lands are going and nothing can be done about them.

e) Draft Goals

1. In the spatial allocation of future urban growth, loss of prime agricultural land should be minimized.
2. The unique Fruit Belt area in Stoney Creek be protected from urban growth. Urban growth on these lands should be permitted only when all other choices have been exhausted.

C. Forests

Intensive agricultural use of the land has excluded timber production, commercially, except in farm woodlots. The Ministry of

Natural Resources manages on agreement forest occupying 989.3 acres in this Region.

The rural area has a great number of woodlots. Most of those treed areas are secondary growth or reforested areas. Existing woodlots are limited to swampy areas or those areas which have adverse physical features which make them unsuitable for crop farming. Concentration of woodlots can be found close to conservation areas, Beverly swamp area, Dundas valley and the Niagara escarpment ridge and most stream valleys and stream banks.

Deciduous and Harwood forests which are considered to be of significance are included in the list of environmental protection areas. These are shown on map 4 and are identified as A4, A5 (E1), A6, A7, A10, F8 and F10. Detailed description of each resource are given under Section 2.

2. Environmental Protection Areas

Although the human life is the key element of the total environment other forms of life are equally important because man depends upon them to satisfy his physical, psychological and emotional and educational needs. Evidence can be found in many urban societies that in the persuit of short lived benefits man has adversely changed the natural living habitats of many species of fish and animal life. Since various elements in the environment interact with each other, loss of natural balance in one of the elements of the environment effects the quality of the total environment.

Proper planning, therefore, requires that those environmental features and/or systems, both physical and biological, be identified which may suffer damage of a permanent or temporary nature. Demage may occur on site, for example, where a sensitive plant species is disturbed either directly through physical disturbance or indirectly through a change in any components of its life support system, (e.g. water table, light intensity, wind exposure etc). Damage may also occur off site, such as downstream destruction of spawning beds by siltation or pollution.

In identifying the Environmental protection areas advice from several sources was utilized extensively - notably that from the Ontario Ministries of Natural Resources and Agriculture, Hamilton Region Conservation Authority and other Conservation Authorities having jurisdiction in this Region, Niagara Excarpment Commission, Royal Botanical Gardens and the Federation of Naturalists.

Based on the criteria established by the Ontario Ministry of Natural Resources the Environmental Protection areas are classified into two categories having regard to their innate characteristics. The Natural systems having attributes which make any development hazardous from the standpoint of potential loss of life and property are defined as Hazard Lands. The second category includes those systems which are themselves, sensitive to

development and are defined as Sensitive Areas.

A. Hazard Lands

a) Definition

Hazard Lands are defined as all lands having inherent physical hazards such as poor drainage, organic soils, flood susceptibility, erosion susceptability, steep slopes (greater than 15%) and other physical limitations to development.

Two levels of hazards are recognized: High Hazard and Low Hazard.

In the High Hazard category, no development is permitted due to the risk of loss of life or property, the high costs of remedial measures to overcome the hazard(s), and the likelihood that all taxpayers have to bear the cost of remedial measures. In the low hazard category, certain types of development may be permitted under specific conditions due to lower risks and costs involved. High Hazard lands associated with flooding are those lands which are effected by floodlines computed for a 1 in 100-yr. storm for watersheds of 320 acres or more.

The Ontario Ministry of Natural Resources has recently completed Hazard Land mapping for this Region, in draft form, on 1" = ¼ mile scale. These plans have been prepared utilizing airphoto interpretation techniques and available engineering reports on flood plain mapping by conservation authorities. The Hazard Land maps are presently being reviewed by the Conservation Authorities.

b) Draft Goals - Hazard Lands Policies

Since the Conservation Authroities have jurisdiction on development control related to lands to be designated as Hazard Lands in the Regional Official Plan, it is suggested that:

1. Criteria on Hazard Lands and Hazard Land mapping prepared by the Ministry of Natural Resources be reviewed jointly by the Conservation Authorities and the planning staff of the Regional and Area Municipalities.

2. Conservation Authorities should develop a planned programme to undertake engineering studies and flood plain mapping for those watercourses and/or streams which have watersheds larger than 320 acres in size.

3. Regional Official Plan should not contain Hazard Land mapping for those areas for which proper engineering studies have not been made.

4. Final Hazard Land mapping be presented and discussed with the owners of the land effected.

B. Sensitive Areas

a) Definition

Sensitive Areas are defined as areas of land and/or water which provide certain positive value to the public and the environment.

These areas may contain one or several of the following features:

a) unique plant communities

b) wildlife habitat (deer yards, fish spawning areas, water fowl nesting areas)

c) Rare or endangered species

d) scenic values

and serve one or several of the following functions:

1) preservation and/or conservation

2) education and interpretation

3) scientific research

Included under this definition are those areas of resource which possess a potential of the above noted features, but which may have been impaired due to activities of urbanization, resulting in an unbalance of the ecological system.

(Note: Ministry's criteria includes preservation of historic and cultural features which are covered under a separate paper)

The sensitive areas identified are shown on map #4 attached, and the description of each resource is given on the attached list.

The sensitive areas identified on Map #4 are not necessarily all those which should be protected, neither should the boundaries be treated as rigorous. Additional areas may be added to the list after further consultation with local municipalities, Conservation Authorities & environmental groups. Also the Ministry of Natural Resources is conducting a study for the Niagara Escarpment Commission which is expected to be completed by the end of this year. This study is anticipated to provide additional details on sensitive areas within the Niagara Escarpment planning area which covers a large part of this Region.

In designating environmental protection areas, it becomes necessary to include sufficient area at the fringe which may not have the same environmental features but which should be included in the designation to act as a buffer.

The identified sensitive areas are essentially the elements of the following natural systems.

1) Niagara Escarpment Corridor
    - includes a variety of scenic, scientific and wildlife habitat components.
2) Flora and Fauna associated with creeks and rivers.
3) Plant and wildlife communities associated with wetlands and bogs.

It can, therefore, be expected that there would be some overlapping of Hazard land mapping and Environmental sensitive areas.

3. WATER RESOURCES AND THEIR MANAGEMENT

Water is the single most important resource which requires to be managed wisely. The life and future growth of a community depend upon a guaranteed supply of water in sufficient quality and quantity. Over and above domestic and industrial consumption, the water is required to fulfil many other functions in an urban-rural setting as in the region of Hamilton-Westworth. These are navigation, recreation, wildlife conservation, irrigation of crops and watering of cattle.

Lake Ontario is the source of water supply in the region, for urban population, whereas the rural population depends on the ground water. Connected to Lake Ontario are two large bodies of water namely the Hamilton Harbour and Coote's Paradise. Since contaminated run-off can effect the quality of both surface and ground water, the most important consideration relating to water quality is the discharge of waste water both domestic and industrial.

The water resources related to Hamilton-Wentworth Region can be categorized as in following:

A. Hamilton Harbour

B. Coote's Paradise

C. Creeks and Reservoirs

D. Ground water and Recharge Areas

Following is a brief summary of each resource indicating the

A. Hamilton Harbour

Hamilton Harbour is an enclosed body of fresh water approximately 5 miles in the east-west direction and 3 miles in the north-south direction. It is connected to Lake Ontario by a ship canal 2400 ft. long and 30 ft. deep. The Harbout contains approximately 62 trillion gallons of water with a mean depth of 43 ft. The Harbour receives drainage from a watershed of 190 sq. miles through several creeks which drain into it with a total annual flow of 28 trillion gallons. Consequently, the natural throughput is approximately 45% per year.

No other water resource has been under as much pressure for competitive urban uses as the Hamilton Harbour. The following are the major functions that the Hamilton Harbour had been called upon to perform.

a) Shipping and Industrial Water Supply

The industries located on the highly developed south shore depend upon the harbour for shipping of raw materials and finished products. They draw 510 million gallons of water per day from the Harbour, as an industrial supply, returning a similar amount of effluent to the Harbour.

b) Receiver for Sewage effluent

Hamilton Harbour is used as a receiver of sewage effluent from Hamilton, Burlington and Dundas. (Hamilton and Burlington discharge their effluents directly whereas Dundas discharges its effluent into Desjardin's Canal which is connected the the Hamilton Harbour). There are 18 industrial water outfalls in Hamilton and 15 storm water outfalls in Hamilton. In addition, various streams bring various forms of pollution into the harbour, including pollution from agricultural uses and urban run-off. It is estimated that the amount of treated wastes and untreated storm sewer overflows entering the Harbour per day are 61 million gallons and 1.9 million gallons respectively. Together with the natural flow, this results in an annual through put of 80%.

c) Recreation

Hamilton Harbour is a remarkable recreational and environmental asset. However, because of its function as a receiver of sewage effluent, the quality of water has deteriorated to the extent that the Harbour's recreational function to provide for bathing and sport fishing has been completely lost. Water quality is generally poor in all parts of Hamilton Harbour. The highest pollutant concentration occurs near the industrial south shore and in Windermere basin. In addition to receiving the flow from Red Hill Creek, Windermere basin receives the discharge from the Hamilton sewage treatment plant (av. 49 MGD in 1972). The bacteria contamination is extremely high. Recreational use is [illegible] limited to pleasure boating

d) Industrial & Port Expansion

Need for industrial expansion and expansion of port facilities have resulted into reclamation by filling and 20% reduction in area has occured between 1917 and 1970. The land filling operation accentuated the degradation of water quality. It is estimated that an additional 100 acres of waterfront land will be required before the end of this century to handle the estimated growth in cargo of approximately 500,000 tons per year. Any future reclamation by landfill together with increased sewage effluent from expanding communities may further jeopardize the self cleansing potential of the Harbour and reduce the quality of water within the harbour itself and of that entering Lake Ontario.

e) Remedial Measures

The degradation in the quality of water of the Hamilton Harbour is a result of abuse that this water resource had experienced over a long period of time during the urbanization process in this Region.

Historically, due to discharge from the combined sewage system in Hamilton and the effluents from industries, the Harbour water became unsafe for body contact as far back as in 1924. The quality of water continued to deteriorate due to increased loads from urban expansion.

However, a great deal of effort has been made in the past few years to improve the quality of effluents discharged into the Harbour by the Municipalities and by the Industries. Given below is a summary of the major capital investments, both public and private, made to reduce the amount of pollutants discharged into the Harbour.

Since 1964, 26 million dollars have been expanded to improve the quality of effluent and storm overflows from the Hamilton Pollution Control system. Additional 2 million dollars are committed to improve the quality of effluent from the Dundas Sewage treatment plant. Tertiary treatment is also planned at both Hamilton and Dundas sewage treatment plants. Also, Burlington sewage treatment plant is being expanded which will eleiminate the overloading conditions and frequent discharge of raw sewage due to by-pass.

The two steel companies, Stelco & Dofasco made a capital investment of 54 million dollars on equipment involving water quality between 1969 and 1974.

The Ministry of the Environment has undertaken a three-year experimental aeration programme at a cost of 180,000.

However, in spite of all the concerted efforts made a recent report suggests that no improvement in the quality of water was observed between 1972 and 1975.

It is anticipated that the Harbour is likely to show only a slow recovery of water quality.

f) Legislation Effecting the Quality of Water

The quality control and monitoring of surface and ground waters come under the jurisdiction of the Provincial Government under the Ontario Water Resources Act and the Environmental Protection Act.

g) Draft Goals for Hamilton Harbour

In light of the conditions documented above, the following draft goals are suggested:

1. The plans to provide tertiary treatment at Hamilton and Dundas sewage treatment plants be implemented without delay.

2. Long term Harbour Planning policies be established in cooperation with the Harbour Commission, City of Hamilton recognizing the need to keep the future land filling to a minimum.

3. Attainable water quality standards be established in cooperation with the Province. Based on the attainable standards in water quality, wildlife and Recreational zones be established.

B. Cootes Paradise

Unlike Hamilton Harbour, the water depth in Coote's Paradise is shallow. The abandoned Desjardin's Canal connects Coote's Paradise with Hamilton Harbour. The water is relatively stagnant in the upper reaches of the canal.

Water quality in Coote's Paradise is extremely poor. - Reduction in water quality has been as a result of effluent discharge from Dundas sewage treatment plant, combined sewage overflow and industrial wastes from Chedoke Creek and occasionally by pollutants entering from Hamilton Harbour due to cross currents. Discharge of raw sewage by-pass from Dundas Sewage Plant has been quite frequent following rainstorm due to overloading of the plant. Coote's Paradise receives drainage from Spencer Creek and Chedoke Creek Watersheds. Excepting the Town of Dundas and the former village of Ancaster the land use in Spencer Creek watershed is generally agricultural. The quality of water in Spencer Creek is within the acceptable limits.

Since Coote's Paradise is a shallow marshy body of water it can be strongly affected by developments in its catchment area, and particularly any actions that will change waste inputs and through flows.

The marshy water of Coote's Paradise and its surrounding landscape provide an important habitat for wildlife. Coote's Paradise, therefore, is one of the areas in the Region designated as "Environmental Protection Area". A further discussion of Coote's Paradise as an environmental protection area is given under section 2.

Expansion of the Dundas sewage treatment plant is in the design stage. It is hoped that the expansion in the capacity together with the proposed tertiary treatment will significantly reduce the pollutant loads discharged into Coote's Paradise. The matter is under study by the Ministry of the Environment.

Suggested Draft Goals

1. Similar to Hamilton Harbour, attainable water quality standards be established for wildlife protection in cooperation with Ministry of the Environment, City of Hamilton, Conservation Authretiy, Town of Dundas and the Royal Botanical Gardens.

(Note: Recommended goals on water quality by Royal Botanical Gardens are included in the main report).

C. Creeks and Water Courses

The management and control of natural creeks and their watersheds fall under the jurisdiction of Conservation Authorities. The total area of the region is divided into four jurisdictions as follows:

(a) Hamilton Region Conservation Authority:
Jurisdiction: This authority has jurisdiction over Spencer, and Sydenham Creeks in Flamborough and Dundas; Ancaster Creek in Ancaster, Chedoke and Red Hill Creeks in Hamilton and Stoney Creek and Battlefield Creek in Stoney Creek. By far the largest watershed area is under Hamilton Region Conservation Authority's jurisdiction and the outfalls of the creeks under this authority's jurisdiction are located within the Regional Municipality.

(b) Halton Region Conservation Authority:
Jurisdiction: Grindstone and Bronte Creeks in Flamborough

(c) The Grand River Conservation Authority:
Jurisdiction: Fairchild Creek

(d) Niagara Region Conservation Authority:
Jurisdiction: 20 Mile Creek and Grand River.

The outfalls of the creeks and river in (b), (c), and (d), are located at points outside of the boundaries of this Region.

The Authorities are charged with the responsibility of conservation and to develop plans for watershed management in order to protect citizens from flooding problems. The authorities also provide a supportive role in the promotion of good water quality.

Hamilton Region Conservation Authority has completed engineering studies for flood line mapping for major drainage basins, namely, Spencer Creek, Sydenham Creek, Stoney Creek, Battlefield Creek, Red Hill Creek, Ancaster and Stoney Creek lowlying areas below the escarpment. These studies provide the authority with a solid basis to enforce fill and construction regulations. Studies for remaining creeks have already been authorized by this authority. As part of its flood protection plans the authority constructed dams for flood storage reservoirs on the Spencer Creek at Valens and Christie. Both reservoirs are used to augment the summer flow of the Spencer Creek, thus improving wildlife habitat and reducing pollution levels. Besides fulfilling their prime function of flood protection the two reservoirs also provide wildlife habitat and water based recreational facilities.

Within the Spencer Creek Watershed there are large acreages of wet lands. Because of their tremendous capacity to store water, approximately 1,000 acres of swamp lands in former Beverly Township have been acquired by the authority for preservation.

The Niagara Conservation Authority has also constructed a flood control reservoir in Glanbrook.

Hamilton Region Conservation Authority maintains a continuous record of water quality on the streams in its jurisdiction in cooperation with the Ministry of the Environment and the Regional Municipal laboratory.

Studies indicate that Red Hill Creek, Grindstone Creek and Chedoke Creek are the most polluted creeks in the Region. Pollution in Red Hill Creek is attributed to the Upper Ottawa dump site in Hamilton including overflows from combined sewers. Grindstone Creek is a receiver of effluent from the sewage treatment plant in Waterdown. Chedoke Creek is plluted due to storm overlows. Stoney Creek and Battlefield Creek are also polluted but to a lesser degree. The quality of water in other creeks is within acceptable limits.

Draft Goals

(1) Conservation Authorities be requested to complete the engineering studies for flood line mapping for all major creeks in the Region.

D. Ground-Water Recharge Areas

No specific information is available at this time on ground-water recharge areas.

A separate study is presently underway to determine the settlement capability in the rural areas of the Region based on ground-water supply and septic tank disposal systems. This study is scheduled to be completed by the end of 1975. The results of this study may identify certain specific recharge areas which will be added to the list of environmental protection areas.

4. Air Pollution

One of the major threats to the quality of urban environment is air pollution. The effects of air pollution range from being mildly irritating to dangerous for health.

Since the enactment of Air Pollution Control Act in 1967, air pollution matters came under the jurisdiction of the Ontario government. Consequently, air quality and its control in Hamilton-Wentworth Region is now administered by the Ontario Ministry of the Environment. Specific regulations are made from time to time concerning permissible contaminant concentrations.

The administration and technical capacity available in the ministry is more sophisticated and comprehensive than that found in any other air pollution jurisdiction in Canada.

The ministry monitors air quality by instruments located at 31 surveillance locations in the Region. Of these, 5 locations are in Flamborough, 1 in Stoney Creek and the remaining 25 are within the City of Hamilton.

The main quality surveillance station is located at Barton and Sanford in Hamilton, and it monitors the following pollutants: (1) sulphur dioxide, (2) carbon monoxide, (3) hydrocarbons, (4) oxides of nitrogen, (5) ozone, (6) hydrogen sulphide, (7) soiling (coefficient of haze), (8) total suspended particulates (9) sulphation and fluoridation rates. Data from this station is used to calculate air pollution index for Hamilton, on which emmission reduction procedures are initiated by the Ministry of Environment during extended period of rising pollution levels.

Five major air pllutants are usually of concern in urban centres. Of these, three are emitted by industries and by space heating of commercial and residential buildings, namely, particulates, oxides of sulphur and oxides of nitrogen. The other two pllutants, carbon monoxide and hydrocarbons are largely dominated by transportation emissions primarily from gasoline powered motor vehicles. On a nation-wide basis over 60% of carbon monoxide and over 50% of hydrocarbon emissions are from motor vehicles.

The industrialized harbour area of Hamilton, primarily occupied by the steel industry, is a major source of emission of small and large particulates, sulphur dioxide and oxides of nitrogen.

In general it seems apparent that emissions of particulates and their concentrations at ground level is the major air quality problem in the Hamilton area. For example, the 1974 data on all pollutants monitored by continuous analyzers at the main station at Barton and Sanford indicate that the daily air quality criteria for soiling index set by the Ministry of the Environment was exceeded on 28 occasions at the Barton and Sanford station.

The air quality criteria for suspended particulates are often exceeded at all locations. Most of the downtown Hamilton including the built up area on the Mountain and the Beach Strip was in excess of the criteria for dustfall. The criteria for the fluoridation rate is exceeded more or less all year along in 1974.

Ambient air concentrations of sulphur dioxide and oxides of nitrogen, although based on limited data, appear to present lesser problems in Hamilton than exists in parts of Toronto, Sudbury and Windsor.

The steel companies in Hamilton, which are major sources of particulates have already made a major effort over the past few years to control particulate emissions from conventional stack sources. However, the analysis of data from the past few years does not clearly indicate any significant trend in improvement of air quality.

Emissions of carbon monoxide and hydrocarbons from motor vehicle exhausts is a function of average car population and age, routes, land use densities and speeds. Reduction in emission of carbon monoxide and hydrocarbons will be largely achieved through the installation of improved control systems for motor vehicles. The requirements for the gradual improvement of those systems, to meet legislation in force since 1968 in Ontario and the United States should bring about satisfactory controls on the 1977-78 model year vehicles.

5. Noise Abatement

The major generators of noise, in this Region, are truck routes provincial highways, airport and railways; the latter three are not under the jurisdiction of either local or regional municipalities. Railways, airport and vehicle noise at sources for new vehicles are regulated by federal government, whereas the provincial highways are under the jurisdiction of the Ontario Ministry of Transportation and Communication.

The Provincial Ministry of the Environment likes to see a uniform approach to noise across the province and are presently preparing a model by-law which will be presented to the municipalities for consideration and adoption.

It is hoped that the model by-law will cover regulation of sound levels from transportation vehicles, construction sites, equipment, etc.

LIST OF
ENVIRONMENTALLY SENSITIVE AREAS

(Preliminary)

see Map #4

(Numbers within the brackets are reference to the files of the Ministry of Natural Resources)

TOWNSHIP OF ANCASTER

SENSITIVE AREA MAPPING

Area Number: A1 (0262)

Resource - unoccupied escarpment land

- scenic view, deer present, racoons, chipmunks, squirrels, foxes, den hare, many songbirds present.
- scenic woodland, abandoned pasture, creeks, marshlands
- buffer strip between Ancaster & Hamilton
- Bruce Trail
- used by Hamilton Field Naturalists

Area Number: A2 (0532)

Name - Hamilton Golf & Country

Resource - 200 acres approv.
- east half is undeveloped
- E½ is undeveloped

- reforestation, conservation pond
- within urban setting
- instant conservation area
- Ancaster Creek floodplain

Area Number: A3 (0533)

Resource - approx. 250 acres of valley lands

- adjacent to Lampman Park (150 acres)
- headwaters Ancaster Creek
- partially wooded - abandoned pasture
- subject to periodic flooding
- wildlife habitat

Area Number: A4 (0314)

Resource - Deciduous Forest Woodlot

Area Number: A5 (E1, 300)

Name - Copetown Bog

Location - East of Highway #52, approximately 3/4 mile south of Hwy. #99.

Resource - It is a well-known nesting place for wild ducks. A project of the Hamilton Naturalists' Club, the area is under option to that club and is open to naturalists.

Area Number: A5 (E1)

Name - Carolinian Woodlot

Resource - Privately owned

Very mature forest of uncommon occurance - typical of the north extent of the Carolinian life zone.

- black walnut (common)
- Beech
- Sugar maple
- Ash
- Spine bush
- Dirca Solustis
- some hickory

- irregular dolostone pavement with small creek through. Understory of ferns, may apple, jack-in-the-pulpit, trillium, yellow and blue violets, etc.

- Fauna - deer seen
  - good for walkers, etc.

Area Number: A5 (0300) - not including E1

Resources - Summit Station

- a marshy scrubland and bog area
- its muskeg feature unique to Southern Ontario, (McMaster University)
- of great significance to botanists

Copetown Bog Conservation Area (23½ AC.)

- muskeg preserve a glacial kettle hole unique to Southern Ontario

Area Number: A6 (0301)

Name - South West Summit Station

Resource - two adjacent forests
- sloping topography

Area Number: A7 (0306)

Name - West Jerseyville

Resource - deciduous forest, flat topography

Area Number: A8 (0304)

1. Name - Jerseyville

   Resource - lowland hardwood forest

2. Name - Williams Property Sugar bush

   Location - Con. III, Ancaster (Boundary of the Township and Brant County)
   Resource - maple sugar bush open to public each year
   - pancakes and syrup, local
   - bush should be thinned every few years to encourage larger crowns, which in turn would sap a great amount of sap per year.

Area Number: A9 (0253)

Resource - Swamp
Dunmark park: scenic woodland and lake private owned recreation area.

Area Number: A10 (0303)

Name - South Duffs Corner

Resource - lowland hardwood forest, dense growth, unthinned. (low priority)

TOWN OF DUNDAS

SENSITIVE AREA MAPPING

Area Number: D1 (0564)

Name - Dundas - Cootes Paradise

Resource - Only occurance of the rare Trionyx Spinifer, the Spiney Soft-shelled turtle, in Lake Ontario

- Pollution and destruction of remote sandy nesting and basking bars necessary to this very aquatic turtle, are the main threats
- the Royal Botanical Gardens
- in the month of April this area serves as a resting place for waterfowl (ducks, geese, coots, and gallinule)
- nesting of wood ducks, herons and other sensitive birds
- observation towers and walking trails provide opportunity for observing wildlife

Area Number: D2

Name - Dundas Valley (0474)

Resource - approximately 5,000 acres

- natural valley area - rough rolling land with a good deal of tree cover: includes the following

1. Name - Tiffany Falls (32)

   Location - Lot 46, Con. II - Ancaster

   Resource - waterfalls, scenic, preserve in natural state

2. Name - Resource Management Centre (67)

   Location - Lot 46, Con. II - Ancaster

   Resource - scientific study area
   - highly used by Wentworth County Board of Education

3. Name - North of Duffs Corner (0302)

   Resource - gently sloping deciduous forest, exceedingly de

4. Name - Spencer Gorge (35)

   Location - lot 12, 13, 14, Con. I - Flamborough

   Resource - rugged beautiful area along the Niagara Escarpment
   - scenic, preserve

5. Name - Mineral Springs Area (0487)

Resource - steeply rolling hills and ravines covered with a mixture of hardwood forests
- this area is proposed for purchase by HRCA

6. Name - Copetown Muskeg - Summit Muskeg Reserve (0487)

Location - Lot 30, Con I Ancaster Twp.

Resource - muskeg
- organic deposits have left a detailed record of this region's natural history

TOWNSHIP OF FLAMBOROUGH

SENSITIVE AREA MAPPING

Area Number: F1 (0364)

Resource - swamp

Area Number: F2 (0367)

Name - Valens Conservation Area

Location - Lot 24, Con. IX (Former Township of Beverly)

Resource - productive largemouth bass fishing area
- sport fishing of bass and northern pike
- approx. 550 acres
- waterfowl: ducks and geese
- duck hunting
- log cabin: pioneer homestead, 1842 (Hamilton Region Conservation Authority)

Area Number: F3 (0144)

Name - Beverly Swamp

Location - On both sides of Highway 97 in the former Beverly Township

Resource - water storage area for Spencer Creek
- contains deer, rabbits, etc.
- approx. 1,000 acres of land acquired by HRCA
- sport fishing of brook trout

Area Number: F4 (0366)

Name - Sheffield

Resource - wildlife and waterfowl (Grand River Conservation Authority)

Area Number: F5 (0143)

Name - Westover

Location - lots 25 and 26, Con. VI - Beverly

Resource - lowland forest

Area Number: F6 (0147)

Name - Haysland

Location - lots 2-3, Con VI West Flamborough

Resource - area recommended for reforestation
- poor agricultural value

Area Number: F7 (0365)

Resource - forested swamp
- water holding area for Grindstone Creek
- estimated 1,000 acres - contains peat and marsh

Area Number: F8 (0142)

Name - Rockton

Location - Lots 21 and 22 Con. V - (former Beverly Township)

Resource - forested area

Area Number: F9 (0538)

Resource - wildlife and waterfowl
- recommended for reforestation
- shallow loam over limestone bedrock
- partly forested and partly pastureland

Area Number: F10 (0141)

Name - Troy

Location - Lot 9, Con III Beverly

Resource - forested area
- partly agricultural land

Area Number: F11 (0537)

Resource - same as F9 (0538)
- wildlife and waterfowl
- reforestation
- partly forested and partly pastureland

Area Number: F12 (0252)

Resource - a unique spring fed bog
- about 6 acres

Area Number: F13 (0175)

Name - Christie Conservation Area

Resource - approx. 850 acres
- multiple use conservation and recreation area
- flood control of Spencer Creek ($750,000 dam)
- expect 10,000 visitors on Sundays
- will have camping, boating, swimming, hiking, demonstration areas
- sport fishing of large mouth bass

Area Number: F14 (0152)

Name - Lake Medad

Location - Lot 1, Con. IV (formerly East Flamborough)

Resource - undeveloped area, heavily forested, deer, grouse, rabbits, pheasant

Area Number: F15 (3F4)

Name - Great Falls Waterdown

Resource- falls over Limestone Scarp
- height 30' Width 30'

Area Number: F16 (0146)

Name- Carlisle

Location - lot 5, Con. VII East Flamborough (former)

Resource - wildlife and waterfowl

Area Number: F17 (0536)

Resource - wildlife area
- wooded

Area Number: F18

Name - Spencer Gorge

Resource - wildlife and waterfowl
- woodlots
- scenic,

TOWNSHIP OF GLANBROOK
SENSITIVE AREA MAPPING

Area Number: G2 (A)

Resource - high wildlife and waterfowl rating

Area Number: G3 (B)

Resource - high wildlife and waterfowl rating (Niagara Conservation Authority area)

Area Number: G4 (G)

1) Name - Valley of Grand River - Rock Hounding Areas

Resource - extensive gypsum lie along the valley of the Grand River between the Towns of Cayuga and Paris

- pink gypsum has been reported on the south side of the Grand River opposite Caledonia

- Mines: at Hagersville, Caledonia, etc.

2) Name: Binbrook Conservation Area

Resource - (approx. area 976 acres provide:)

- sport fishing for large mouth bass and Norther pike
- controlled waterfowl hunting area
- breeding and staging area for waterfowl
- camping, picnicing, swimming and hiking

CITY OF HAMILTON

SENSITIVE AREA MAPPING

Area Number: H1 (0561)

Resource - only breeding spot for Clemys Guttata, the Spotted Turtle in the Lake Ontario region.

- Clemys Guttata is a rare and endangered species

Area Number: H2 (0526)

(a) Name - Confederation Park

(b) Resource - Scenic and Recreation
- Red Hill Creek marsh, large migrating waterfowl (teal, gallenules, mallards and geese)

Red Hill Creek Natural System (Scenic, Recreational and Wildlife)

1. Area Number: H3 (0530)

   Resource - white water lily
   - adjacent to QEW
   - remains of old Lake lagoon
   - round stem bullrush

2. Area Number: H4 (3F6)

   Name - Buttermilk Falls

   Resource - waterfalls
   - height = 75' width = 25'
   - limestone gorge

3. Area Number: H5 (34)

   Name - Devils Punch Bowl

   Location - Lot 28, Con. IV, (Saltfleet Twp. formerly)

   Resource - scenic lookout
   - overlooking Hamilton area

4. Area Number: H6 (3F5)

   Name - Albion Falls

   Resource - height = 60' width = 25'
   - drops over limestone into limestone gorge

5. Area Number: H7 (0530)

Name - King Forest Golf Course & Recreation
- Glendale Golf & C.C.

Area Number: H8

Name - Royal Botanical Gardens

Resource - One of the best man-made scenic attractions.

Area Number: H4 (0527)

Resource: High wildlife and waterfowl rating

TOWN OF STONEY CREEK

SENSITIVE AREA MAPPING

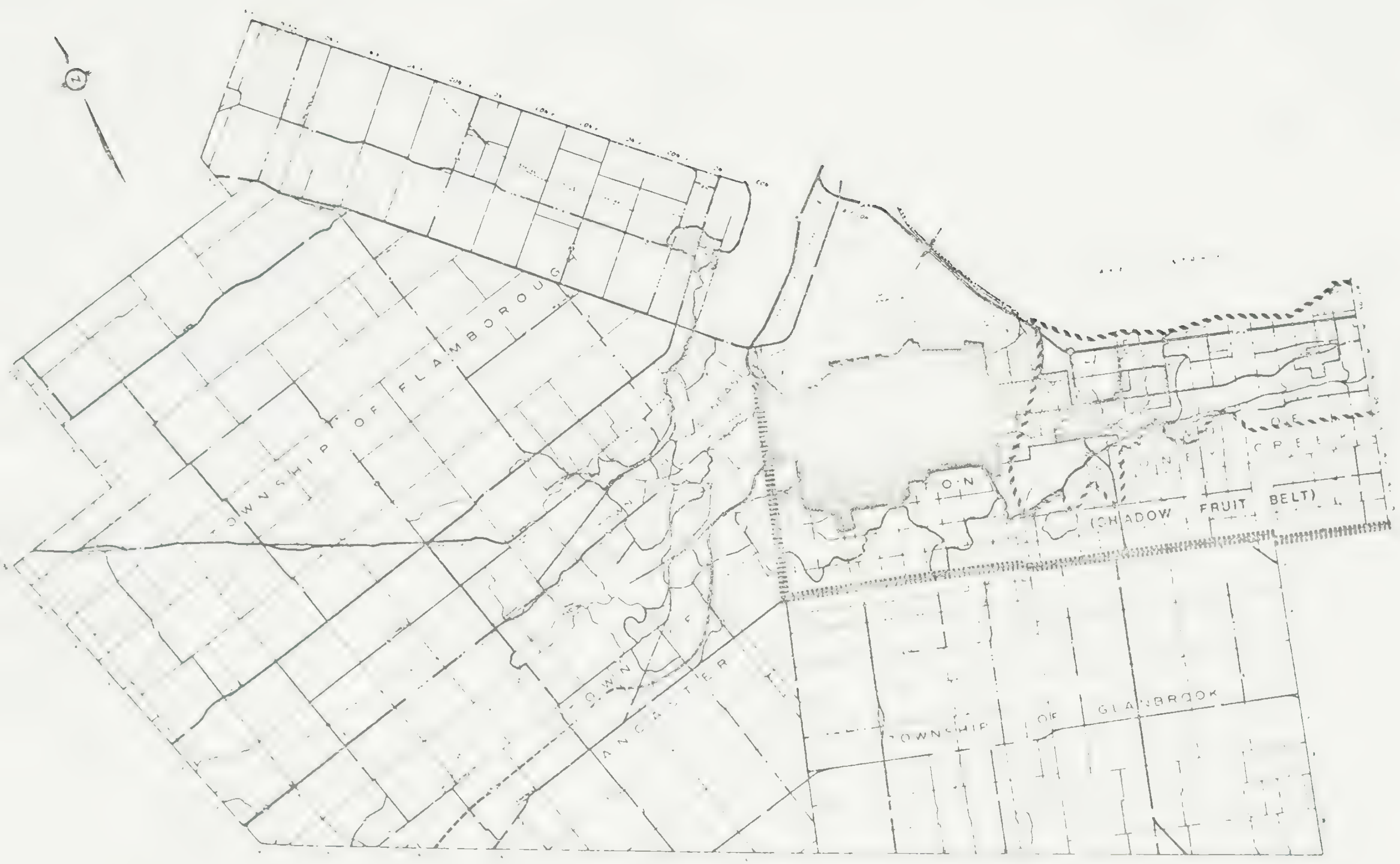
Area Number: S3 (0528)

Resource - site of Battle of Stoney Creek-1813
- owned by Niagara Commission

Stoney Creek Falls

1. Area Number: S4 (0529)

Resource - Devil's punch bowl conservation area



THE REGIONAL MUNICIPALITY
OF HAMILTON-WENTWORTH

Regional Planning & Development Department

LEGEND

▨ BOUNDARIES OF THE FRUIT BELT AS DEFINED BY KRUEGER (1958)

▭ INTENSIVE FRUIT BELT

BUILT-UP AREA

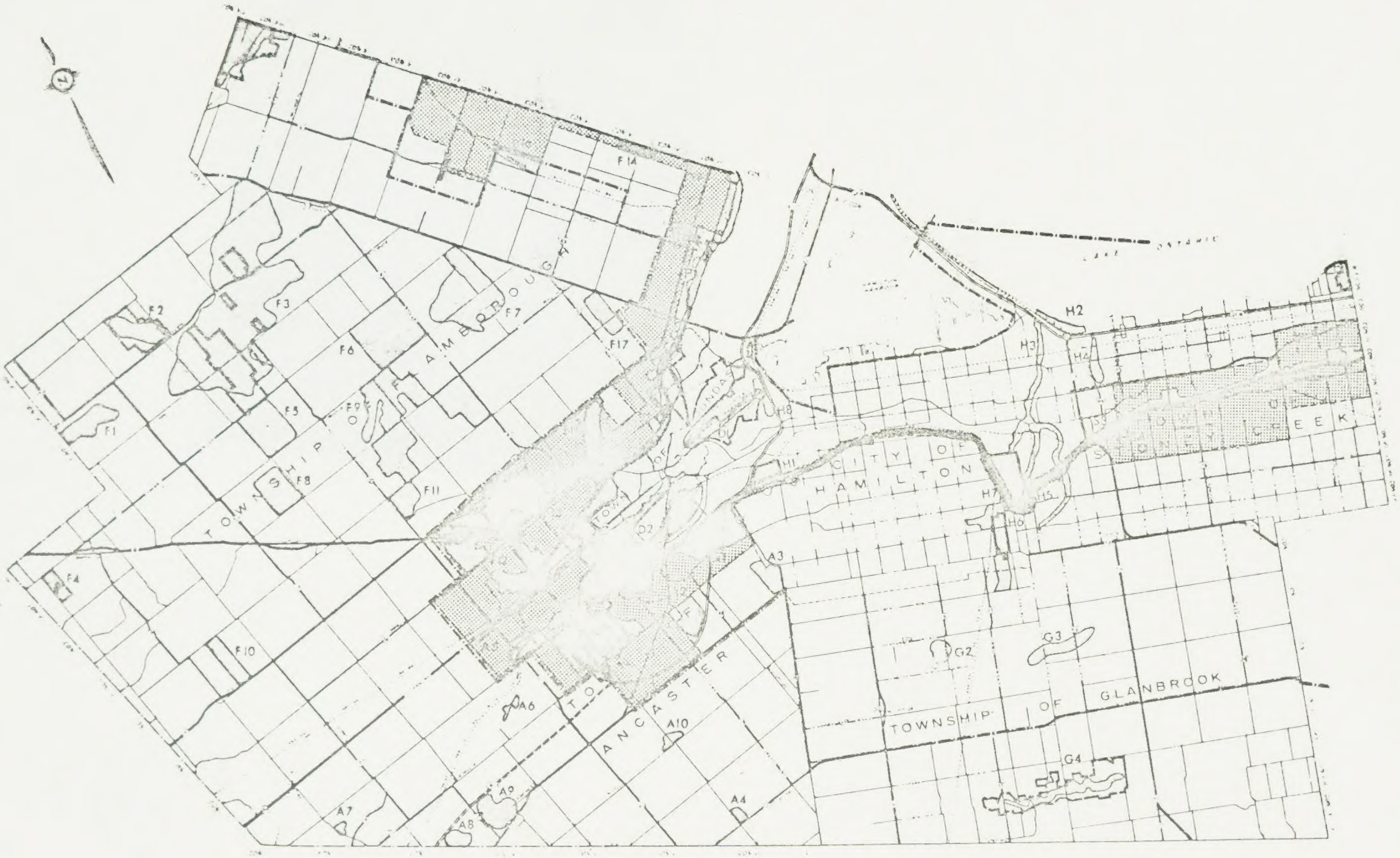
1934	▨
1954	▨
1965	▭
1975	▭

Scale 1 0 1 2 3 4 5 KM
(1" = 2 MILES)

Date NOVEMBER, 1975

URBAN EXPANSION
ON FRUIT BELT

Map No 2



THE REGIONAL MUNICIPALITY OF HAMILTON - WENTWORTH

Regional Planning & Development Department

LEGEND

▭	Identified Sensitive Areas
—·—	Niagara Escarpment Planning Area
▨	Niagara Escarpment Development Control Area
▭	Lands Under Public Ownership
— —	Municipal Boundary

Scale km

Date Nov 13, 1975

ENVIRONMENTALLY SENSITIVE AREAS

Map No 4

THE HAMILTON PUBLIC LIBRARY

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